

REMARKS

Status of the Claims

Claims 1, 2, and 5-19 are pending, with claim 1 being independent. Without conceding the propriety of the rejection, claim 1 has been amended. Support for the amendment can be found throughout the specification, including, for example, at page 8, lines 9 – 13 and page 9, lines 7 – 15.

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the following remarks.

Claim Rejections Under 35 U.S.C. § 112

Claims 1, 2, and 5-19 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The claims are alleged to contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Without conceding the propriety of the rejection, claim 1 has been amended to recite a “conventional filter”. Support for a “conventional filter” can be found throughout the specification, including, for example, at page 8, lines 9-13 and page 9, lines 7-15. Accordingly, withdrawal of the rejection under 35 U.S.C. § 112 is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, and 5-11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 (“Ackerman”). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. (Col. 1, lines 19-22). Ackerman teaches that this novel process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes. (Col. 3, lines 26-28).

In contrast, the present invention relates to a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprising a) filtering a Fischer-Tropsch derived hydrocarbon stream with a ***conventional filter*** to remove contamination having an

average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) passing the filtered hydrocarbon stream to at least one *distillation step to remove contamination* present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream, the distillation step producing a distillate product stream and a bottoms fraction, wherein the contamination is substantially concentrated in the bottoms fraction; and c) recovering the bottoms fraction from the distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Accordingly, the present invention uses conventional filtering to remove contamination having an average size greater than or equal to about 1 micron and then uses a distillation step to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream. In the present invention the distillation is being utilized to remove contamination present as soluble species or as ultra-fine particulate, not as a means of fractionating the product stream. Therefore, the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

As described above, Ackerman discloses a novel wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. It is respectfully submitted that the novel wire filter element of Ackerman is not a conventional filter. Furthermore, Ackerman discloses that the process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes. (Col. 3, lines 26-28). Accordingly, it is respectfully submitted that Ackerman does not disclose or suggest that there would be contamination present as soluble species or as ultra-fine particulate after use of the wire filter element. Moreover, Ackerman discloses using distillation merely as a means of separating product streams (*i.e.*, fractionation). As such, Ackerman does not disclose or suggest distilling to remove contamination present as soluble species or as ultra-fine particulate, nor does Ackerman disclose or suggest that the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Therefore, it is respectfully submitted that Ackerman does not disclose or suggest the presently claimed a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprising a) filtering a Fischer-Tropsch derived hydrocarbon stream with a conventional filter to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) passing the filtered hydrocarbon stream to at least one distillation step to remove contamination present as

soluble species or as ultra-fine particulate from the filtered hydrocarbon stream, the distillation step producing a distillate product stream and a bottoms fraction, wherein the contamination is substantially concentrated in the bottoms fraction; and c) recovering the bottoms fraction from the distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 1, 2, and 5-11 over Ackerman be withdrawn.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 4,605,678 ("Brennan"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. Ackerman teaches that this novel process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes.

Brennan discloses a process for removing catalyst fines from the wax product produced in a slurry Fischer-Tropsch reactor comprising removing the wax product from the reactor and separating catalyst fines from the product by passing the wax product through a high gradient magnetic field. Brennan is cited as disclosing that the product may be further upgraded by hydrotreating.

As described above in detail, Ackerman does not disclose or suggest the presently claimed a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprising a) filtering a Fischer-Tropsch derived hydrocarbon stream with a conventional filter to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) passing the filtered hydrocarbon stream to at least one distillation step to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream, the distillation step producing a distillate product stream and a bottoms fraction, wherein the contamination is substantially concentrated in the bottoms fraction; and c) recovering the bottoms fraction from the distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by

volume of the filtered hydrocarbon stream. Brennan is cited as disclosing that the product may be further upgraded by hydrotreating. Accordingly, as cited, Brennan fails to cure the many above-noted deficiencies with respect to Ackerman.

Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claim 12 over Ackerman in view of Brennan be withdrawn.

Claims 13, 14, 16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 2,852,546 ("Kolling"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. Ackerman teaches that this novel process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes.

Kolling discloses a process for converting hard paraffins into paraffins preferably melting between about 40 and 80°C. (Col. 2, lines 7-9). As disclosed in the present specification, Kolling describes an atmospheric distillation followed by a vacuum distillation of a Fischer-Tropsch wax to separate paraffins with melting points between 40 and 80°C. (page 16, line 31 – page 17, line 2). Accordingly, Kolling discloses an atmospheric distillation followed by a vacuum distillation as a *separation technique to provide desired Fischer-Tropsch products*, not to remove contamination.

As described above in detail, Ackerman does not disclose or suggest the presently claimed a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprising a) filtering a Fischer-Tropsch derived hydrocarbon stream with a conventional filter to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) passing the filtered hydrocarbon stream to at least one distillation step to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream, the distillation step producing a distillate product stream and a bottoms fraction, wherein the contamination is substantially concentrated in the bottoms fraction; and c) recovering the bottoms fraction from the

distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Kolling is cited as disclosing a two stage distillation. However, Kolling discloses an atmospheric distillation followed by a vacuum distillation as a *separation technique to provide desired Fischer-Tropsch products*, not to remove contamination. Accordingly, as cited, Kolling fails to cure the many above-noted deficiencies with respect to Ackerman. Moreover, even if there were some suggestion or motivation to combine Ackerman and Kolling and a reasonable expectation of success, even if combined Ackerman and Kolling do not disclose or suggest all of the claim limitations of the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream.

Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 13, 14, 16, 18, and 19 over Ackerman in view of Kolling be withdrawn.

Claims 15 and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 2,852,546 ("Kolling") and further in view of U.S. Patent No. 4,605,678 ("Brennan"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. Ackerman teaches that this novel process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes.

Kolling discloses a process for converting hard paraffins into paraffins preferably melting between about 40 and 80°C. (Col. 2, lines 7-9). As disclosed in the present specification, Kolling describes an atmospheric distillation followed by a vacuum distillation of a Fischer-Tropsch wax to separate paraffins with melting points between 40 and 80°C. (page 16, line 31 – page 17, line 2). Accordingly, Kolling discloses an atmospheric distillation followed by a vacuum distillation as a *separation technique to provide desired Fischer-Tropsch products*, not to remove contamination.

Brennan discloses a process for removing catalyst fines from the wax product produced in a slurry Fischer-Tropsch reactor comprising removing the wax product from the reactor and separating catalyst fines from the product by passing the wax product through a high gradient magnetic field. Brennan is cited as disclosing that the product may be further upgraded by hydrotreating.

As described above in detail, Ackerman does not disclose or suggest the presently claimed a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprising a) filtering a Fischer-Tropsch derived hydrocarbon stream with a conventional filter to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) passing the filtered hydrocarbon stream to at least one distillation step to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream, the distillation step producing a distillate product stream and a bottoms fraction, wherein the contamination is substantially concentrated in the bottoms fraction; and c) recovering the bottoms fraction from the distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Also as described above, Kolling is cited as disclosing a two stage distillation. However, Kolling discloses an atmospheric distillation followed by a vacuum distillation as a *separation technique to provide desired Fischer-Tropsch products*, not to remove contamination. Accordingly, as cited, Kolling fails to cure the many above-noted deficiencies with respect to Ackerman. Moreover, even if there were some suggestion or motivation to combine Ackerman and Kolling and a reasonable expectation of success, even if combined Ackerman and Kolling do not disclose or suggest all of the claim limitations of the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream.

Brennan is cited merely as disclosing that the product may be further upgraded by hydrotreating. Accordingly, as cited, Brennan fails to cure the many above-noted deficiencies with respect to Ackerman and Ackerman in view of Kolling.

Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 15 and 17 over Ackerman in view of Kolling further in view of Brennan be withdrawn.

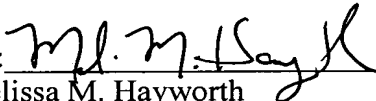
Conclusion

For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the present claims.

In view of the foregoing amendments and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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